

### **REMARKS/ARGUMENTS**

Reconsideration of this application, in view of the foregoing amendment and the following remarks and arguments, is respectfully requested.

Claims 1-39 were originally presented for consideration in this application. By the foregoing amendment, Claims 1 and 11 have been revised and Claims 21-39 have been canceled without prejudice or disclaimer. Accordingly, Claims 1-20 remain in this application for consideration and allowance.

Claims 1-20 currently stand finally rejected under 35 USC §103(a) as being unpatentable over U.S. Patent 3,756,202 to Keith in view of U.S. Patent 4,418,650 to Johnson et al. This rejection is respectfully traversed for the following reasons.

In a representatively illustrated preferred embodiment thereof, the applicants' invention provides fuel-fired heating apparatus having a combustion chamber through which a mutually spaced plurality of tubular fuel burners horizontally extend. The burners are upwardly spaced apart from a rigid fiberboard insulation panel structure defining an interior side portion of the combustion chamber. Sandwiched between and contacting the bottom sides of the burners and the top side of the rigid fiberboard panel is a blanket of resilient ceramic fiber insulation material which functions to (1) prevent uncombusted fuel from firing burners from being circulated under non-firing burners, (2) increase the operating temperatures of bottom sides of the burners during firing thereof to lessen thermal stresses in the firing burners, (3) resiliently permit differential thermal expansion of the burners, and (4) reduce harmonic resonance of the burners, and associated operational noise of the heating apparatus, during firing of the burners.

Via amended independent Claims 1 and 11, each of applicants' remaining Claims 1-20 now recites that:

(1) the combustion chamber has a **relatively rigid** interior side portion [representatively defined by the rigid insulation structure 24];

(2) each fuel burner extends through the combustion chamber in a spaced apart, **noncontacting** relationship with the relatively rigid interior side portion of the combustion chamber, with the fuel burner having a burner side portion facing the interior side portion of the combustion chamber; and

(3) an insulation structure [representatively the fiber insulation blanket 60] is sandwiched between and contacts the burner side portion and the relatively rigid interior side portion of the combustion chamber and **prevents contact between the burner side portion and the relatively rigid interior side portion of the combustion chamber in a direction transverse to the relatively rigid interior side portion of the combustion chamber**, the insulation structure being resiliently compressible between the burner side portion and the relatively rigid interior side portion of the combustion chamber in response to thermal expansion of the fuel burner, during firing thereof, **in said direction transverse to said interior side portion of said combustion chamber**.

In rejecting Claims 1-20 over Keith in view of Johnson et al, the Examiner contends that it would be obvious to modify the Keith fuel burners 37 shown in FIGS. 1 and 2 by applying to the undersides of such burners the fluidized bed cooling tube insulation structure shown in FIG. 2 of Johnson et al.

It would clearly not be obvious to make this combination since there would be no motivation for one of ordinary skill in the combustion art to make such combination. It should first be noted that the Keith invention is directed to improving the thermal efficiency of the heat exchange tubes 20 disposed above the fuel burner tubes 37. Such burner tubes 37 are disposed within the combustion chamber 15 in an upwardly spaced relationship with a rigid metal bottom wall of the combustion chamber. There is no insulation structure of any sort interposed between the burner tubes 37 and the rigid bottom side of the combustion chamber 15.

In FIG. 2 of Johnson et al the insulation structure 56,60 referred to by the Examiner is not utilized in conjunction with fuel burner tubes as required by Claims 1-20, but are utilized instead on **cooling** tubes through which **cooling water** is flowed. The only burner structure shown in Johnson et al is the bed light-off burner 32 which disposed on the **exterior** of the fluidized bed heat exchanger apparatus and does not extend through a combustion chamber, and is not contacted by any resilient insulation material, as required by the present applicants' Claims 1-20. Accordingly, both of the Keith and Johnson et al references teach **away** from insulating a burner structure as specified in the present applicants' Claims 1-20, and it would thus not be obvious to combine these two references as proposed by the Examiner.

Even if the Keith and Johnson et al references were to be combined as proposed by the Examiner, the resulting combination would still not meet the limitations of any of applicants' Claims 1-20.

Specifically, as clearly illustrated in FIG. 2 of Johnson et al the tubular elements 40 are in **direct contact** with the rigid wall structure 56 - they are not spaced apart from such rigid structure, in a **noncontacting** relationship therewith, as required by Claims 1-20. This illustrated **contacting** relationship between the tubes 40 and the underlying rigid structure is confirmed in the Johnson et al specification, beginning on line 3 of column 4 thereof, wherein it is stated that:

A horizontally extending insulating board 56, preferably of a fiber material, extends from the front wall 12 to the rear wall 14 (FIG. 1) and in a **tangential** [i.e., contacting] relationship to the lower surface of the tubes, as viewed in FIG. 2.

Accordingly, even if the Johnson et al insulation structure 56,60 were to be placed along the undersides of the Keith burner tubes 37 shown in FIGS. 1 and 2 of Keith as being proposed by the Examiner, the resulting burner and insulation structure in Keith would clearly not meet the limitations of Claims 1-20. Specifically, the Keith burner tubes 37 would not be spaced apart from the rigid Johnson et al structure 54, but would be **contacting** it, the Johnson et al fiber blanket material 60 would not **prevent contact** between burner side portions and the relatively rigid interior Johnson et al material 56 rigid interior side portion of the combustion chamber, and the Johnson et al fiber blanket material 60 would not be resiliently compressible between the burner tubes 37 and the relatively rigid structure 56 in response to thermal expansion of the burner tubes 56, during firing thereof, in a direction transverse to the relatively rigid structure 56 as required by Claims 1-20.

It is thus respectfully submitted that Claims 1-20 are patentably distinguishable over the Keith and Johnson et al references, whether such references are considered singly or in any combination thereof.

Finally, in his December 23, 2005 Office Action the Examiner states that:

In regard to the limitations of the claims as to the particular arrangement of the layers with respect to the burners, when this insulation layer of Johnson is provided in the boiler the arrangement is possibly such that the fiberboard is located above the blanket. However to have arranged these layers such that the ceramic blanket lies beneath the burner and above the fiberboard layer would be simply a matter of reversing the layers. As this insulation arrangement of Johnson desirably functions in the same manner and for the same purpose as applicant's invention in providing improved insulation in a boiler (see Johnson, col. 1, lines 7-11 \_this reversal of parts is not regarded as patentably distinct.

It is difficult to see how, from the teachings of Johnson et al, the Examiner reaches the conclusion that the insulation structure 56,60 in Johnson et al could be reversed in his unsupported combination of Johnson et al with Keith. Regardless of whether the Johnson et al insulation structure 56 was on top of or beneath the insulation structure 60, if the Johnson insulation structure 56,60 were somehow incorporated on the underside of the Keith burner tubes 37 as proposed by the examiner, the tubes 37 would **contact** the relatively rigid Johnson structure 56 and thus, as discussed above, the Keith/Johnson et al reference combination proposed by the Examiner would clearly not meet the limitations of the present applicants' Claims 1-20.

In view of the foregoing amendment, remarks and arguments, all of the claims currently pending in this application are now seen to be in a condition for allowance. A Notice of Allowance of Claims 1-20 is therefore earnestly solicited.

The Examiner is hereby requested to telephone the undersigned attorney of record at 972/516-0030 if such would further or expedite the prosecution of the instant application.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450,

on January 3, 2006  
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